AMENDMENTS TO THE CLAIMS

1-62. (Cancelled)

63. (Previously Presented) A method for electrolytic production of aluminum metal from an electrolyte including aluminum oxide, the method comprising:

performing electrolysis in an electrowinning cell comprising at least one inert anode and at least one cathode, the at least one anode and the at least one cathode being arranged so as to face each other, wherein the at least one anode evolves oxygen gas and aluminum is discharged onto the at least one cathode during the electrolysis, the at least one cathode being substantially horizontal; and

directing the oxygen gas to flow into grooves in an electroactive surface of the at least one anode so as to be drained away from an interpolar room, and so as to establish and enforce an electrolyte flow pattern between the at least one cathode and the at least one anode and over the at least one anode, wherein the grooves of the at least one anode define a plurality of anode teeth, each of the anode teeth having a V-shaped bottom surface which slopes from a center line of a respective anode tooth toward an adjacent groove, and wherein the grooves are sloped in a longitudinal direction of the grooves and away from the at least one cathode.

64. (Previously Presented) A method in accordance with claim 63, wherein at least one of the at least one anode and an anode connection is configured to be cooled so as to provide at least one of (1) heat exchange with at least one of the at least one anode and the at least one cathode, (2) heat recovery from at least one of the at least one anode and the at least one cathode, and (3) temperature control.

65. (Previously Presented) A method in accordance with claim 63, wherein at least one of the at least one anode and an anode connection is configured to be cooled by means of liquid cooling, gas cooling, or by the use of heat pipes.

66. (Previously Presented) A method in accordance with claim 63, wherein feeding of alumina to the cell is continuous or semi-continuous, and wherein the alumina fed to the cell contains as fine particulates as possible.

67. (Previously Presented) A method in accordance with claim 63, wherein the cell uses an electrolyte with a temperature in the range of 880 - 970°C.

68. (Previously Presented) An electrowinning cell for electrolytic production of aluminum metal from an electrolyte including aluminum oxide, the cell comprising:

at least one inert anode and at least one cathode, the at least one anode and the at least one anode being arranged so as to face each other, the at least one cathode being substantially horizontal, wherein the anode is configured to evolve oxygen gas during an electrolysis process in which aluminum is discharged onto the at least one cathode such that the oxygen gas enforces an electrolyte flow pattern, wherein the electrolyte flow pattern is to be established between the at least one cathode and the at least one anode and over the at least one anode; and

grooves arranged in an electroactive surface of the at least one anode so as to drain away oxygen from an interpolar room, wherein the grooves of the at least one anode define a plurality of anode teeth, each of the anode teeth having a V-shaped bottom surface which slopes from a center line of a respective anode tooth toward an adjacent groove, and wherein the grooves are sloped in a longitudinal direction of the grooves and away from the at least one cathode.

69. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the grooves have a depth of 1-3 cm and a width of 1-3 cm.

70. (Previously Presented) An electrowinning cell in accordance with claim 69, wherein the bottom surface of each of the anode teeth is sloped 1-5° from the center line of the respective anode tooth towards an adjacent groove so as to efficiently drain produced gas into the

adjacent groove.

71. (Previously Presented) An electrowinning cell in accordance with claim 69, wherein the bottom surface of each of the anode teeth is sloped 1-2° from the center line of the respective anode tooth towards an adjacent groove, and wherein the grooves are sloped in the longitudinal direction of the grooves and away from the at least one cathode at an angle of 1-5° so as to obtain efficient drainage of produced gas collected in the grooves and establish a desired flow pattern in the electrolyte.

72. (Previously Presented) An electrowinning cell in accordance with claim 69, wherein each of the anode teeth has a width of 10-20 cm so as to obtain a uniform current density and a low bubble layer resistance.

73. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein corners and edges of the grooves and at least one anode are at least one of smoothened and rounded so as to provide a uniform flow characteristic and current density.

74. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein a top surface of the at least one anode is shaped to set up a circulation pattern for distributing fresh electrolyte to all parts of the cell.

75. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein a top of the at least one anode is insulated above a bath level around stubs as well as a cathode bottom to make it possible to run the cell thermally in balance with a reduced inter polar distance as compared to traditional Hall-Heroult cells.

76. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one anode is totally immersed in the electrolyte so as to achieve sufficient

electrolyte flow and thermal balance in the cell.

77. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one anode comprises a plurality of anodes, and wherein two or more anodes form an anode cluster, the anode cluster being connected to an anode raiser, and being connected to a busbar system via an anode beam.

78. (Previously Presented) An electrowinning cell in accordance with claim 77, wherein the plurality of anodes comprises a plurality of anode clusters, and wherein the anode clusters are arranged so as to orient the grooves in such a way that produced oxygen in the grooves sets up an electrolytic flow pattern that facilitates sufficient electrolytic flow velocity to obtain uniform distribution of alumina in the cell without muck formation.

79. (Previously Presented) An electrowinning cell in accordance with claim 78, wherein the anode clusters are arranged at an optimized position with respect to an orientation of the grooves and an orientation of side and center channels so as to provide a desired alumina mixing and distribution.

80. (Previously Presented) An electrowinning cell in accordance with claim 77, wherein the plurality of anodes comprises a plurality of anode clusters, and wherein the anode clusters are arranged at an optimized position with respect to an orientation of the grooves and an orientation of side and center channels so as to provide a desired alumina mixing and distribution.

81. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the bottom surface of each of the at least one anode is cone-shaped or roof-shaped with three or more planes which include surfaces angled towards a hole in a top surface of the grooves where produced gas can escape.

82. (Cancelled)

83. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one anode has a ceramic outer surface, and wherein a center portion of the at least one anode is made of an electrical conducting material including a cermet or a metal or a combination thereof.

84. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one anode is comprised of a plurality of smaller units integrated in one larger unit.

85. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the cell is connected to at least one gas exhaust system for extracting and collecting gasses from an electrolysis chamber.

86. (Previously Presented) An electrowinning cell in accordance with claim 68, further comprising an exhaust system which is connected to an alumina feeding system in which hot off-gasses are used for at least one of heating alumina feed stock and cleaning of the off-gasses from the cell to remove at least one of fluoride vapors, fluoride particulates and dust before entering a gas collection system.

87. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one cathode is manufactured from carbon blocks or carbon covered or mixed with an electrically conductive refractory hard material (RHM) based on borides, carbides, nitrides, silicides or mixtures thereof.

88. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one cathode is made of horizontal carbon blocks or drained carbon composite

blocks.

89. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one cathode comprises an aluminum pool, the aluminum pool being stabilized by an optimized busbar system magnetic field.

90. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the cell has a sidewall lining made of an electrically non-conductive material.

91. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein a sidewall lining of the cell is made of a material selected from aluminum oxide, aluminum nitride, silicon carbide, silicon nitride, and combinations thereof or composites thereof.

92. (Cancelled)

93. (Previously Presented) An electrowinning cell in accordance with claim 68, wherein the at least one anode comprises a plurality of anodes, and wherein the cell further comprises at least one feeding point for alumina located at a position close to high-turbulence areas in the electrolyte, and in an area between two or more of the anodes.

94. (Cancelled)